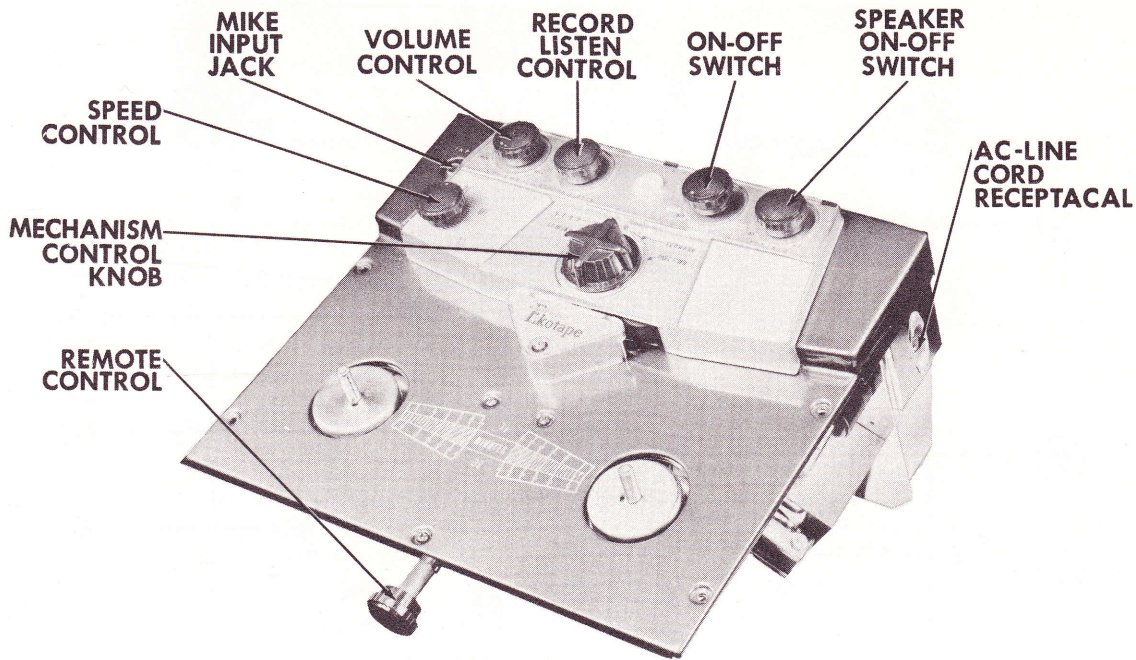




EKOTAPE
MODEL 212



EKOTAPE
MODEL 212

Figure 1

GENERAL INFORMATION

The Webster Electric Ekotape Recorder Model 212 is for custom installation and has no cabinet, or carrying case. The Model 212 is designed to record and play back two tracks of material on standard width recording tape, which doubles the playing time of a standard 5" or 7" reel of tape with no loss of frequency response or quality. Recording can be made from a radio, television receiver or phonograph, in addition to those made directly from the microphone.

The Model 212 has two tape speeds, 3 3/4" and 7 1/2" per second. Using both tracks of the tape, recording time is as follows:

<u>Size Reel</u>	<u>3 3/4"Speed</u>	<u>7 1/2"Speed</u>
5"	1 hour	1/2 hour
7"	2 hours	1 hour

This unit is designed to operate on 60 cycle, 115 volts, AC supply only. Before connecting to your line supply, be absolutely certain that it agrees with the above specifications.

Manufactured by:

Webster Electric Company
Racine, Wisconsin

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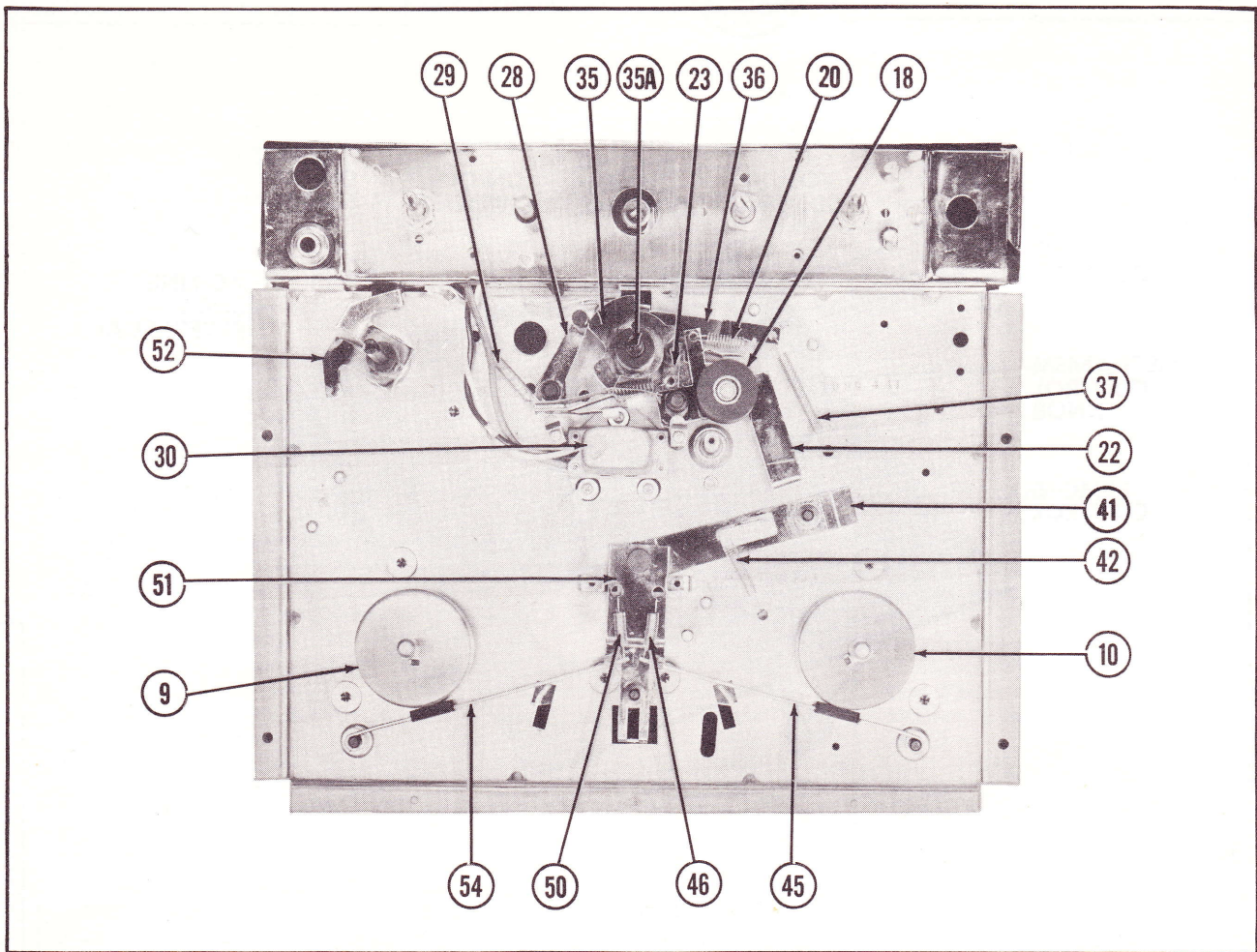


Figure 2

OPERATING INSTRUCTIONS

Preparing The Ekotape For Recording-

1. Insert the AC power cord into the receptacle on the right side of the unit.
2. Plug the AC cord into a convenient wall receptacle of the proper rating.
3. Place a reel of tape on the left hand or "supply" spindle (9) in a manner so that the tape will unwind in a clockwise direction.

NOTE: The Ekotape is designed to use Type "A" wound tape, i. e. the dull magnetic coated side faces inward on the reel. If the tape used is Type "B" (coated side facing outward) the recording will be made at a very low sound level and the playback will be almost inaudible.

4. Place an empty reel on the right hand or "take-up" spindle.

5. Unwind approximately 10" of tape and, while holding a section of tape straight with both hands, insert the tape in the tape slot making sure the dull coated side of the tape faces the front of the recorder.

6. Insert the free end of the tape through to the hub of the "take-up" reel, forcing it into one of the three radial slots. While holding the tape in this position, turn the reel several turns (clockwise) until the tape is secured to the reel and all slack is taken up between reels.

To Make A Recording-

1. After the recording tape has been properly threaded, turn the "On-Off" control to the "On" position.
2. Turn the mechanism control knob (2) to "Forward".
3. Turn the "Record-Listen" selector knob to the "Record" position.

NOTE: The "Record-Listen" selector knob will stay in the "Record" position only when the mechanism control knob (2) is in the "Forward" position.

4. Turn the "Volume" control clockwise until the incoming signal causes the "Record Indicator" to flicker occasionally. A recording is now being made on the tape.

To Record From Microphone-

1. Insert the microphone plug into the "Mic." jack, located on the left side of the top panel.
2. Follow the instructions under the heading of, "To Make A Recording".
3. Best results will be obtained if the microphone is kept closer to the source of sound than to any walls in the recording area to prevent echos of the sounds as they rebound off the walls.

NOTE: The microphone should be kept at least three feet away from the loudspeaker during recording unless the "Speaker" control knob is in "Off" position.

To Record From Radio Or Television Receiver-

Recordings can be made from a radio or television receiver by placing the microphone near the loudspeaker; however, this type of recording may not be satisfactory as other sounds may be picked up by the microphone which as a result may be recorded on the tape. A superior quality recording can be made by use of Radio Cord Attachment. Connect attachment cord as follows:

1. Connect the cord clips across the voice coil terminals on the radio or television speaker.
2. A terminal strip marked Rad-Pho- Input is provided on the bottom of the chassis, and the other end of cord should be connected here.
3. Set the radio or television receiver for soft playing, then operate the Ekotape controls as described under "To Make A Recording".

To Record From Phonograph-

1. Connect the alligator clips of the Radio Cord Attachment to the ends of the pickup leads of the phonograph and then connect the other end to the terminal marked Radio-Pho-Input. Proceed with the recording as described under "To Make A Recording".

NOTE: Should a hum develop from the above connections, reverse the cord clips on the pickup leads.

To Rewind-

Turn the mechanism control knob (2) counterclockwise into the "Rewind" position. When the rewinding is completed move the mechanism control knob (2) into "Stop" position and allow the tape to come to a complete stop before moving the mechanism control knob to any other function.

Twin Track Operation-

Model 212 is a twin-track unit, which records on approximately half the width of the tape at one time.

1. To record a second program on the same tape, lift the full reel from the right hand spindle, turn it over, and place it on the left hand spindle.
2. Place the empty reel on the right hand spindle;

properly thread the tape, and continue your recording as described under "To Make A Recording".

NOTE: Since it is impossible to edit and splice one "track" without affecting the other, recordings which are to be edited should be limited to one track only.

To Play A Recording-

1. With the tape properly threaded, turn the mechanism control knob (2) to the "Forward" position.

2. Adjust the "Volume" and "Tone" controls to suit.

3. Be sure the speaker "On-Off" switch, located on the right side of the top panel, is in the "On" position.

Fast Forward-

If it is desired to reach a recording near the end of a tape in a few seconds, turn mechanism control knob (2) to the "Fast Forward" position. In the "Fast Forward" position the tape moves ahead approximately 15 times normal listening speed of 3 3/4 or 7 1/2 inches per second. The most rapid fast forward speed is therefore obtained with the speed control set at 7 1/2.

REMOVING UNIT FROM MOUNTING BOARD

All service work with the exception of cleaning the head assembly, adjustment or replacement of brake lever assemblies (45 and 54), remote lever assembly (51), pinch roller and lever assemblies (22), (23) and (18), pressure pad assembly (28), will require removal of unit from the mounting board.

1. To remove the back cover (5) for cleaning of the head remove all control knobs, and remove two screws located under mechanism control knob (2). Move back cover (5) about 1/16 inch toward the front of the unit and lift straight up and off.

2. To remove record head cover (7), remove one attaching screw and lift off.

3. For removal of the top panel assembly (13), follow the above instructions and remove seven screws on panel and two under back cover (5). Lift panel straight up and off.

4. To remove recorder from mounting board, omit paragraph 1, 2 and 3, detach the AC line cord, remove two screws located on each side of the top panel. Carefully lift unit straight up and out, detaching all leads, and other connections to the amplifier. Make sure unit is completely free of the amplifier.

5. When reassembling the unit, reverse the above procedure; plug the amplifier leads into the unit as marked on the bottom of the unit. Be sure that all leads clear all moving parts before lowering into place.

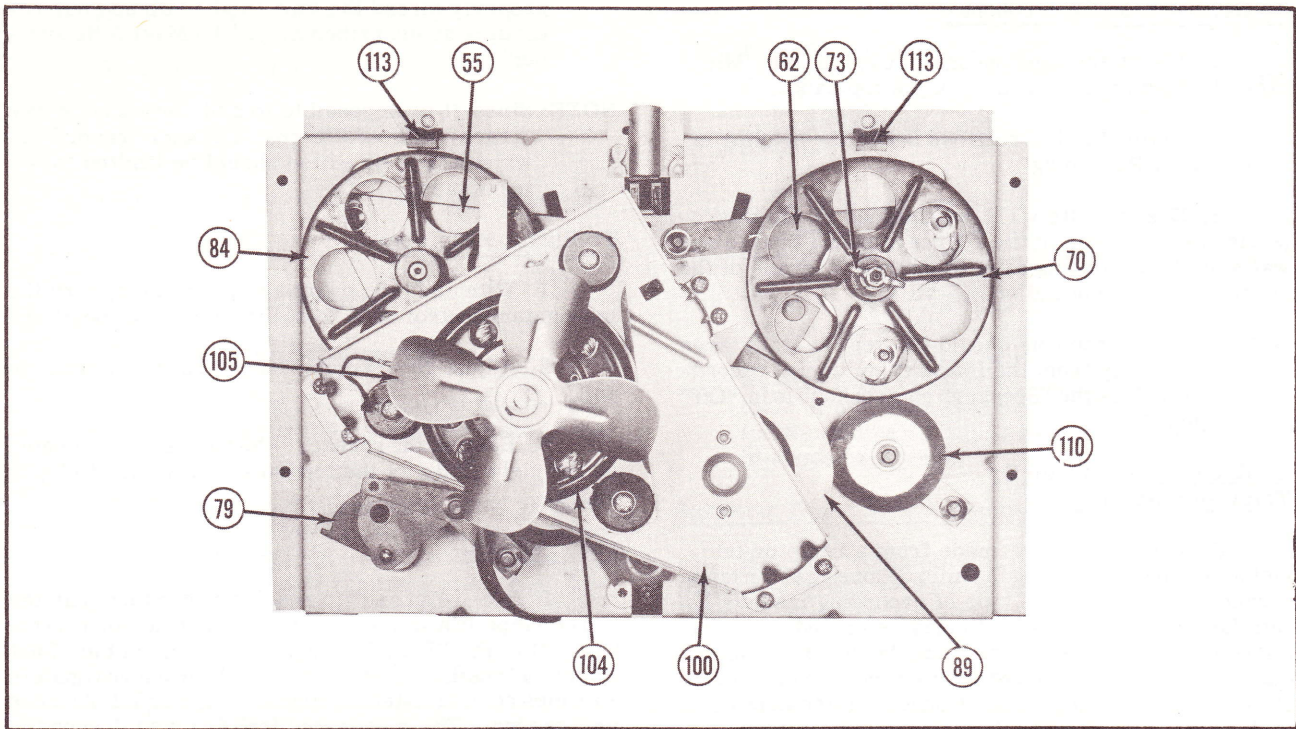


Figure 3

TROUBLES AND REMEDIES

Motor Or Amplifier Inoperative When On-Off Control Switch Is Turned On-

1. Check to see if power is reaching recorder.
2. Damaged power cord.
 (a) Repair or replace.
3. Damaged "On-Off" control switch.
 (a) Replace "On-Off" control switch assembly.
4. Defective power transformer, or rectifier tube, will cause the amplifier to be inoperative.
 (a) Replace power transformer, or rectifier tube.

Sound Is Fuzzy, Faint, Distorted, Or No Sound-

1. Dirty head.
 (a) Check the record head (30) to see if it is dirty. The recording head is subject to an accumulation of tape coating residue, which is worn off the tape as it passes the head. This should be periodically removed since it may cause faint recordings and poor playback. Wipe off the record and erase head contact surfaces carefully with a clean cloth. If dirt is caked or hard and will not come off with a dry cloth, dampen the cloth slightly with carbon tetrachloride.

NOTE: Do not use a brush or excessive amount of solvent on the head surfaces.

2. Over recorded or under recorded tape.
 (a) Correct recording volume is very important. Too weak a signal, which does not cause the record level indicator to flicker, will result in weak playback and high background noise. Too strong a signal, causing the indicator to glow continuously, will result in distortion during playback.

3. Amplifier trouble.

4. Worn or dirty pressure pad. See "Pressure Pad And Lever Adjustments".

5. Pressure pad spring (29) loose or missing.
 (a) The pressure pad lever assembly (28) should apply pressure against the tape, thus holding the tape firm against the recording head. If this is not true, check the pressure pad spring (29); if loose or missing, replace.

Erasing Incomplete Or No Erase-

1. Dirt on face of play-record head.
 (a) Clean with soft cloth and carbon tetrachloride.
2. Oscillator coil assembly or tube not operating.
 (a) Check erase voltage with an AC vacuum tube voltmeter. There should be a reading of approximately 45 volts.
3. Defective erase coil in head.
 (a) Check erase head continuity.
4. Pressure pads worn or not properly adjusted. See "Pressure Pad And Lever Adjustments".

Failure To Record-

1. Record coil open.
 (a) Replace play-record head (30).
2. Insufficient bias voltage.
 (a) Check bias voltage across play-record head with an AC vacuum tube voltmeter. There should be a reading of approximately 100 volts.
3. Dirt on face of play-record head.
 (a) Clean with soft cloth and carbon tetrachloride.

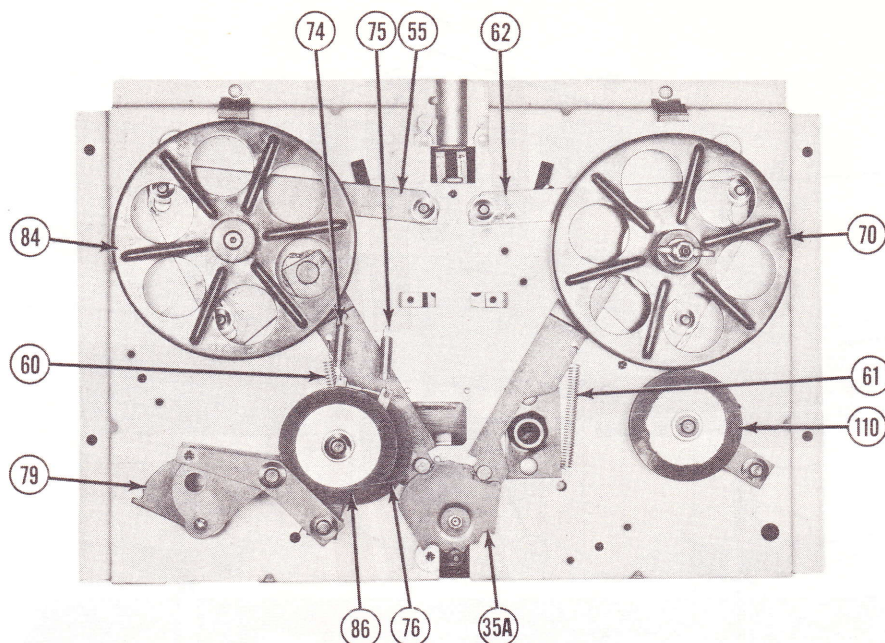


Figure 4

4. Pressurepad worn, defective or not properly adjusted.

(a) Adjust pressure pad or replace. See "Pressure Pad And Lever Adjustments".

Will Not Play Back-

1. Open coil in play-record head.
(a) Replace head.
2. Open input circuit.
(a) Check circuit.

Howl Or Ringing Sound-

1. Microphonic tube.
(a) Replace defective tube.

Trouble Common To Radio Receivers-

1. Defective components.
(a) Check and replace in accordance with standard practice.

Rewind Inoperative, Noisy Or Irregular-

1. Defective motor pulley assembly (94).
(a) Replace.
2. Supply reel shaft support assembly (55), dirty or defective.
(a) Clean, lubricate or replace.
3. Supply reel support spring (60) is broken.
(a) Replace.
4. Brake (45) dragging on take-up reel.
(a) Adjust brakes. See "Adjusting Brake Lever Assembly".

Tape Overruns From Rewind To Stop-

1. Take-up reel brakes (45) not functioning properly, worn or improperly adjusted.

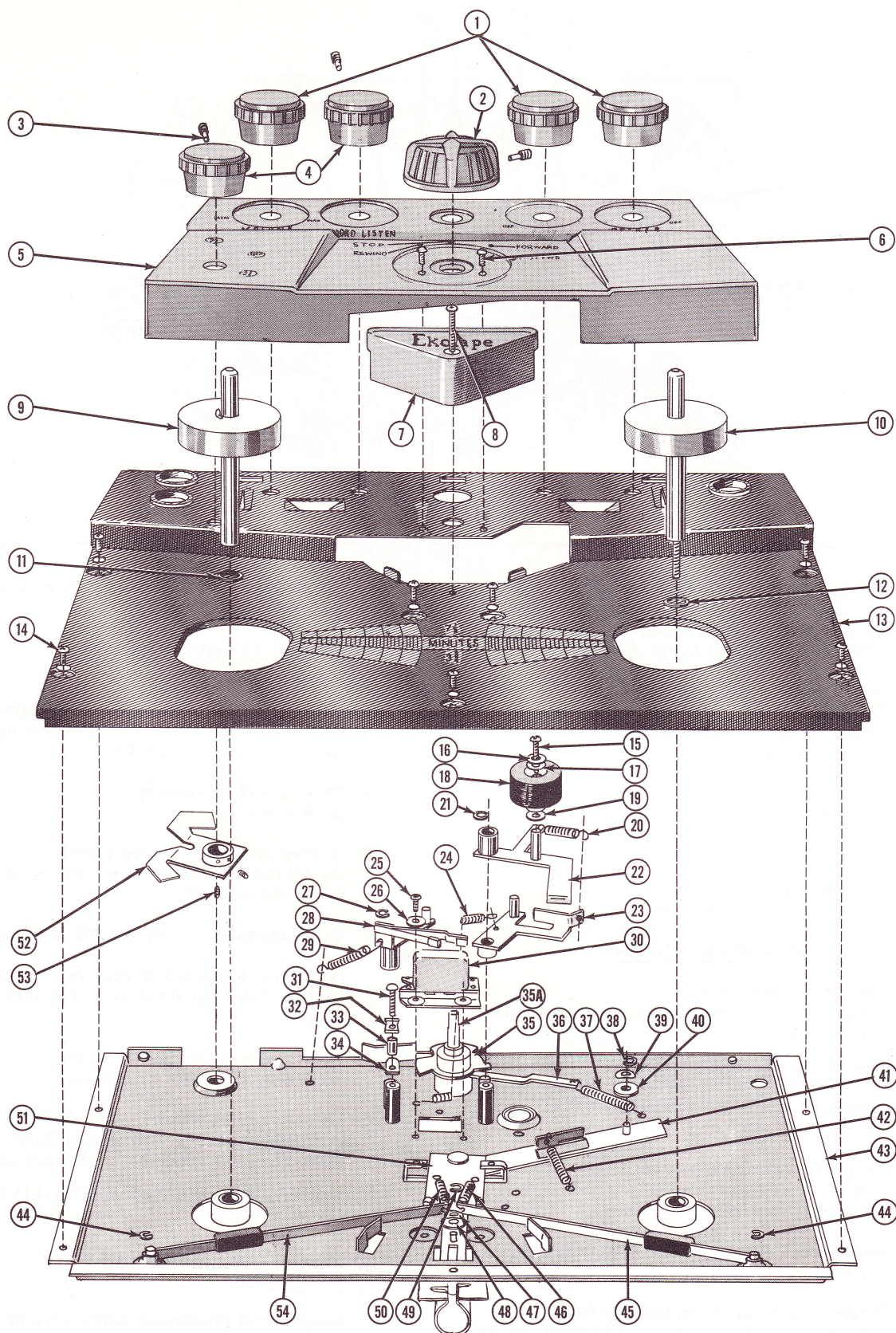
(a) Replace or readjust. See "Adjusting Brake Lever Assembly".

Take-Up Or Fast Forward Inoperative, Noisy Or Irregular Drive-

1. Take-up clutch worn or out of adjustment.
(a) Adjust or replace. See "Correcting Take-Up And Fast-Forward Troubles".
2. Drive pin (67) missing.
(a) Replace.
3. Brakes dragging on supply reel.
(a) Adjust brakes. See "Adjusting Brake Lever Assembly".
4. Take-up reel support plate (62) dirty or damaged.
(a) Clean, lubricate or replace. See "Correcting Take-Up And Fast-Forward Troubles".
5. Noisy, take-up or fast forward.
(a) Clean, lubricate or replace.
6. Defective idler wheels (76 or 86).
(a) Replace. See "Correcting Take-Up And Fast-Forward Troubles". (Paragraph 4).
7. Reel take-up support plate spring (61) broken.
(a) Replace.

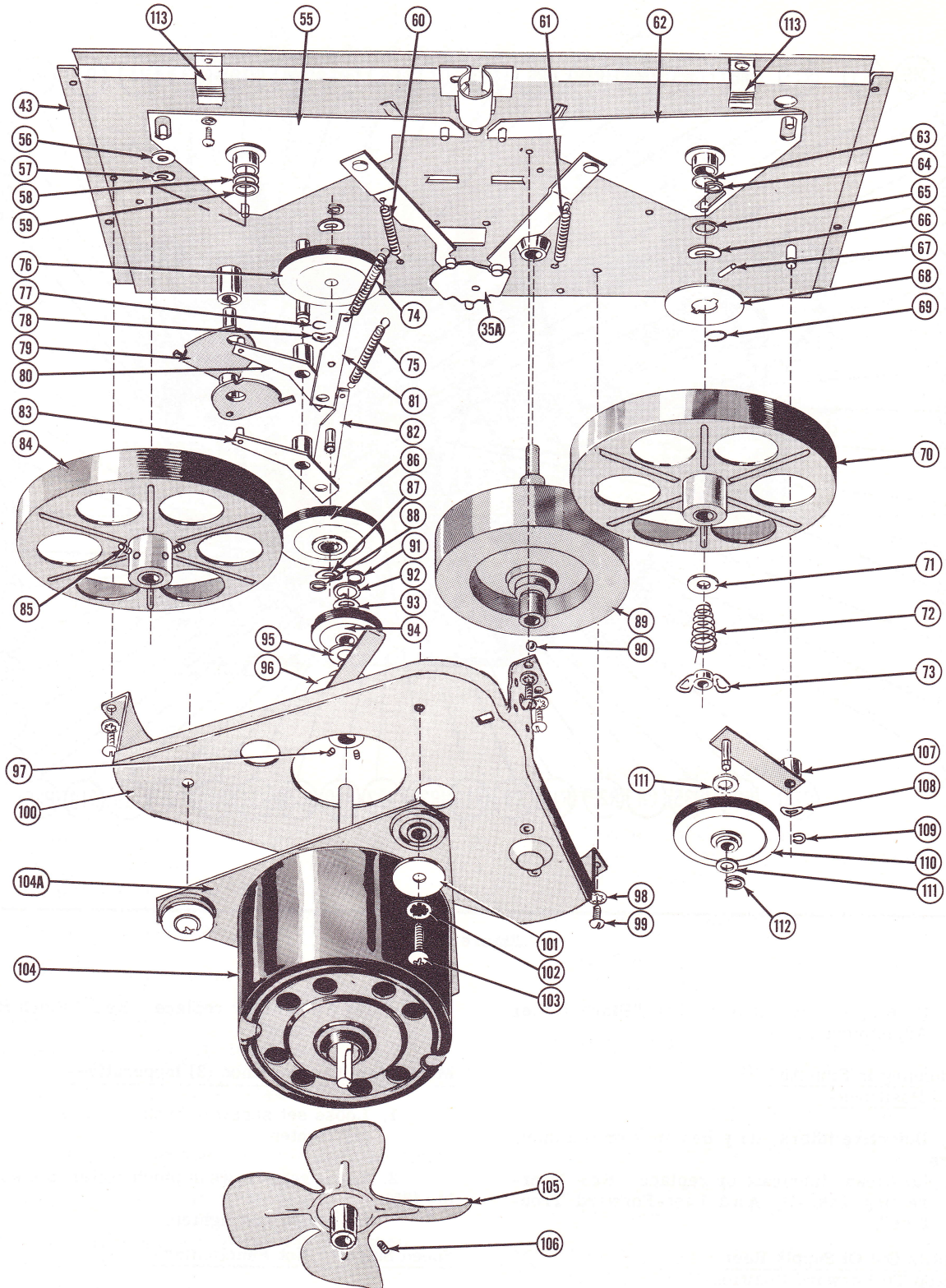
Tape Overruns From Fast Forward To Forward Position-

1. Supply reel brakes not functioning properly, worn or out of adjustment.
(a) Replace or readjust. See "Adjusting Brake Lever Assembly".
2. Pinch roller (18) damaged or out of adjustment.



A PHOTOFAC "EXPLODED" VIEW
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Figure 5A. Exploded View Of Parts Above Baseplate.



A PHOTOFACT "EXPLODED" VIEW
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Figure 5B. Exploded View Of Parts Below Baseplate.

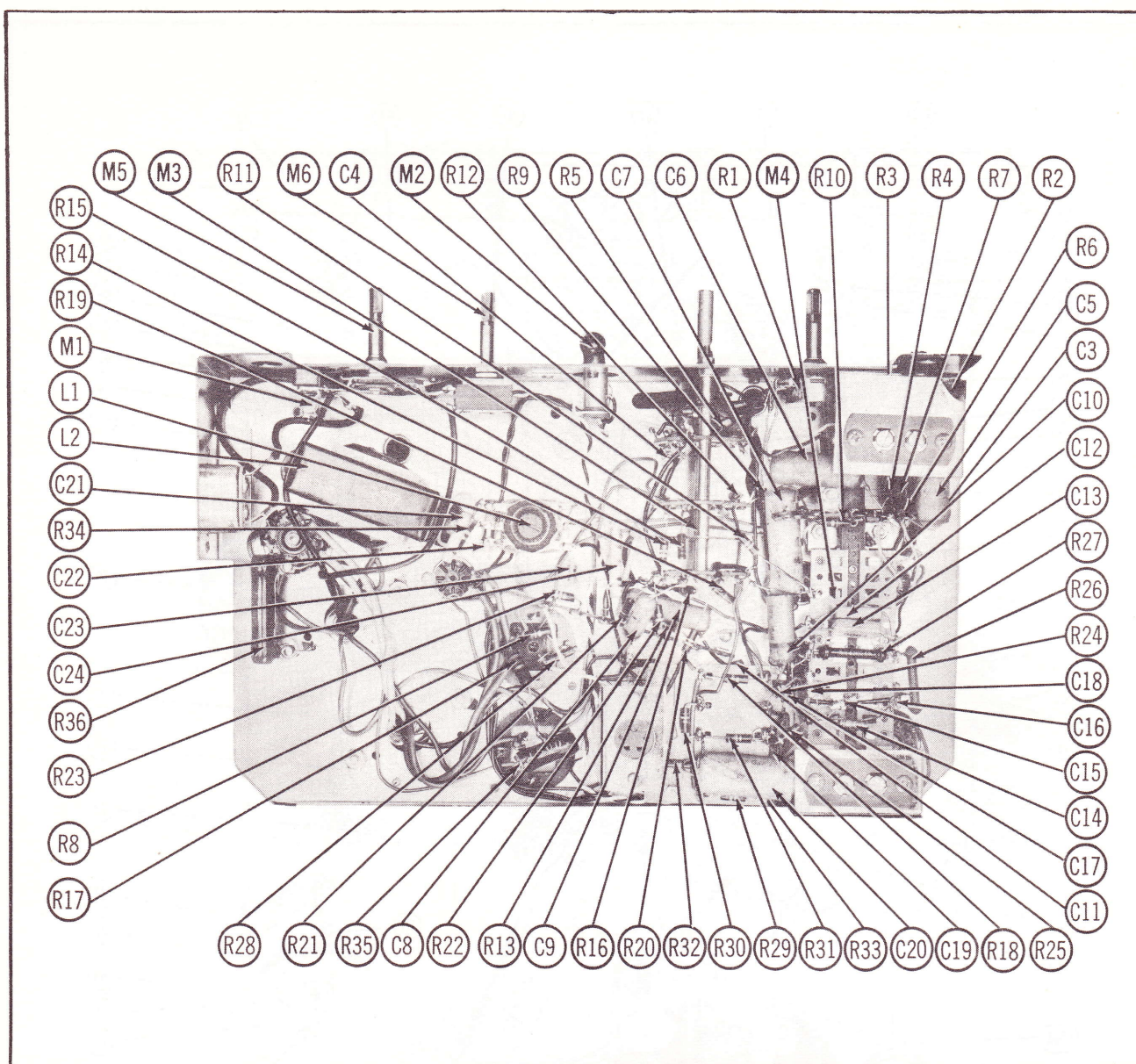


Figure 6

(a) Repair or replace. See "Pinch Roller Adjustment".

Noisy Running In Stop And Forward Positions-

1. Defective idlers, dry bearings or flat spots on idlers.
(a) Clean, lubricate or replace. See "Correcting Take-Up And Fast-Forward Troubles".

Tape Spills Out Of Supply Reel From Stop To Forward Position-

1. Dirty or defective pinch roller (18).
(a) Clean, lubricate or replace. See "Correcting Take-Up And Fast-Forward Troubles".
2. Pinch roller lever assemblies (22 and 23) out of adjustment or damaged.

(a) Adjust or replace. See "Pinch Roller Adjustment".

Mechanism Control Knob (2) Inoperative-

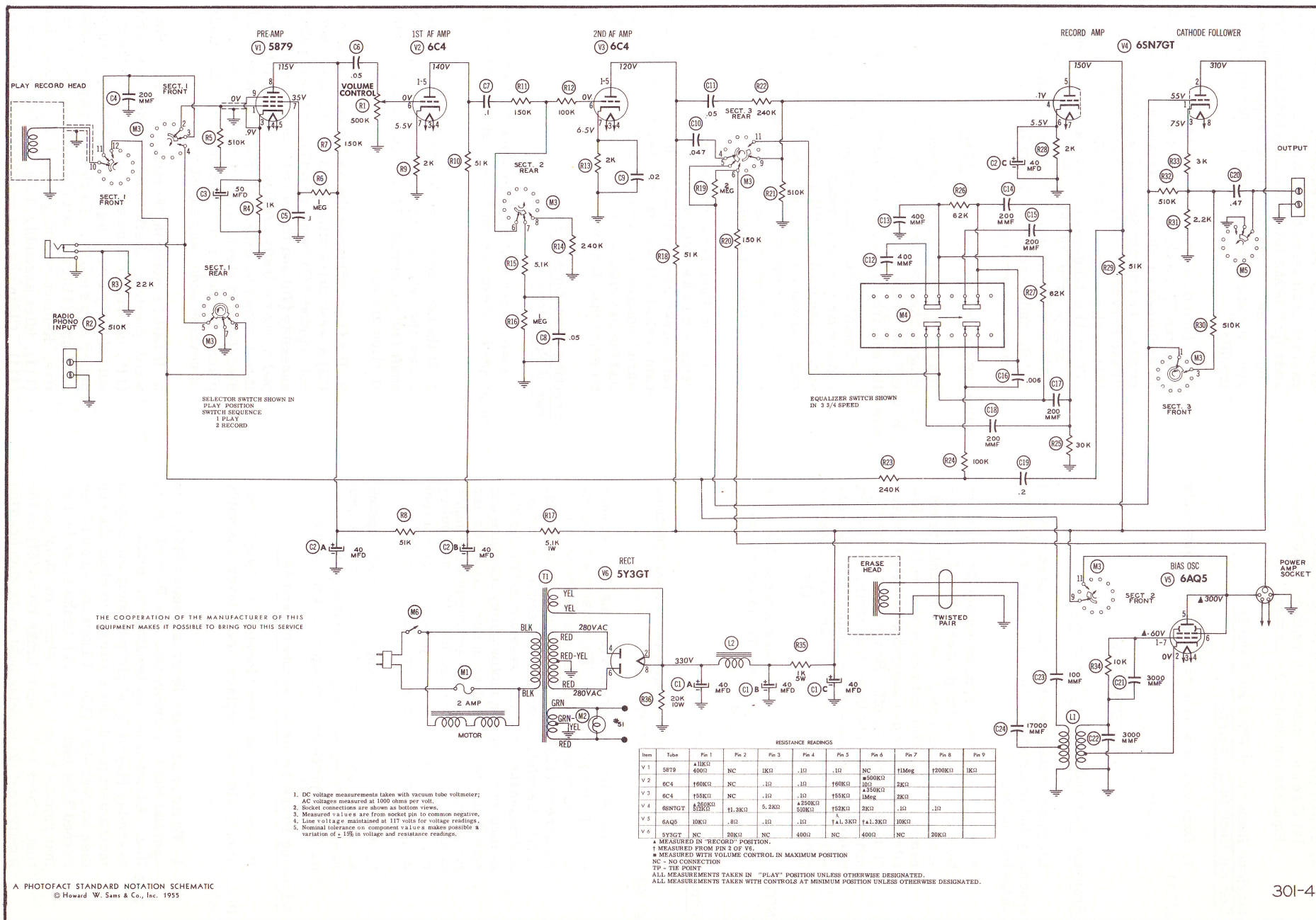
1. Loose set screw in knob.
(a) Tighten.
2. Loose set screws in pinch roller cam assembly (35).
(a) Adjust and tighten.

Speed Selector Not Functioning-

1. Broken springs (74 and 75) on drive idler assemblies.
(a) Replace.

Speed Equalization Switch Not Functioning-

1. Switch cam assembly (52) loose or broken.
(a) Tighten or replace.



2. Switch contacts worn, dirty or broken.
 - (a) Clean contacts or replace. See "Speed Equalization Switch Adjustment".

Machine Inoperative When Mechanism Control Knob Is Operated-

1. Damaged or worn cam and shaft assembly (35A).
 - (a) Replace.

ADJUSTMENTS

Pressure Pad And Lever Adjustments-

Cleaning, adjusting or replacing pressure pad assembly and lever assemblies should be done in the following manner:

1. To adjust pressure pad assembly (28), remove back cover (5) and top panel (13). To remove assembly for cleaning, repair or adjustment, remove spring (29) and retaining ring (27). Rotate the pressure pad assembly slightly counter-clockwise and lift off. Reassemble in reverse order and lubricate (see "Lubrication"). Adjust by turning cam and shaft assembly (35A) to "Forward" position and check to be sure pressure pads engage groove of head properly.

NOTE: Be sure flat of pad presses against the erase and record pole pieces. To adjust properly, bend levers accordingly.

Improper Rewind Operation-

If the unit does not perform the rewind operation properly, check as follows:

1. A defective motor pulley (94) may be the cause of improper rewind. To replace a defective motor pulley assembly, remove the three mounting screws (103) from motor and plate assembly (104). Carefully remove the assembly so as not to damage the drive idler assemblies (76 and 86). Before removing the motor pulley measure and note distance from hub to motor. Loosen the two Allen head set screws and remove the motor pulley assembly. Reassemble with a new pulley in reverse order. Be sure pulley hub is correct distance from motor as previously noted.
2. A dirty or defective supply reel shaft support assembly (55) may be responsible for improper rewind. To correct faulty operation, clean, repair or replace any damaged or worn parts.

Adjusting Brake Lever Assembly (45 and 54)-

If tape overruns from "Rewind" to "Stop" position, adjust, clean or replace brake lever assembly (45).

1. To adjust brake lever assembly (45), turn cam and shaft assembly (35A) to "Rewind" position. Adjust either by bending the brake lever assembly (45) or by slightly bending the stop on mechanism panel just enough to clear the cup disc on reel shaft (10). Clearance should not exceed 1/64 inch. Adjust brake lever (45) so that remote lever (51) returns to "Stop" position. Check to be sure brake lever (54) on the supply reel (9) is being held in its stop position

by the remote lever assembly (51). If not, turn cam and shaft assembly (35A) to "Fast Forward" and adjust brake lever assembly (54) as outlined above. Before reassembly of top panel, thread recorder with tape and check unit for any further trouble.

2. If tape overruns from "Fast Forward" to "Forward", check operation of brake lever (54) as explained in above paragraph with this exception; turn cam and shaft assembly (35A) to "Fast Forward" position and adjust brake lever (54) on the supply reel (9). Check brake lever (45) on the take-up reel to be sure it is held in its stop position by the remote lever assembly (51). If not, turn cam and shaft assembly (35A) to "Rewind" and adjust brake lever as covered in above paragraph.

Adjusting Brake Arm Assembly (113)-

If after completing adjustments as covered in "Adjusting Brake Lever Assembly", the overrun on "Rewind" and "Fast Forward" is not corrected, remove the unit from the case and check as follows:

1. Check "Rewind" position first and adjust or replace brake arm assembly (113). First be sure brake pad is still attached to arm. Turn cam and shaft assembly (35A) to the "Rewind" position and adjust the brake arm (113) so pad just clears the reel pulley assembly (70) but by no more than 1/64 inch.
2. Check "Fast Forward" position and adjust or replace brake arm assembly (113). First be sure brake pad is still attached to arm. Turn cam and shaft assembly (35A) to "Fast Forward" position and adjust brake arm (113) so that the pad clears reel pulley assembly (84) by no more than 1/64 inch.

Correcting Take-Up And Fast Forward Troubles-

If take-up and fast forward drive does not function properly, remove unit from case and check as follows:

1. If the take-up or fast-forward drive is weak, screw the self-locking wing nut (73) on the reel shaft (10) so spring (72) will produce a greater friction drive.
2. If after adjusting the self-locking wing nut (73) a weak drive still exists, then remove wing nut, spring (72), washer (71) and reel pulley assembly (70) and check felt pad on pulley. If pad is worn badly, replace assembly (70), but if pad shows no excessive wear, remove clutch disc (68) and check to see if drive pin (67) is in place. Replace pin if missing and reassemble in reverse order and adjust wing nut.
3. If unit is noisy in "Forward" or "Fast-Forward" position, check to see if idler assembly (110) is dirty or damaged. Or it may be the result of dirty bearings on the take-up shaft or pulley assembly. To check, inspect idler assembly (110) and determine if dirty or defective. Remove retaining ring (112), fibre washer (111), idler assembly (110), and fibre washer (111). Clean any dirt or oil from idler tire and

bearing. Clean flywheel and shaft assembly (89), drive area only, also reel pulley (70) drive area with a suitable solvent. Relubricate idler bearing and reassemble in reverse order.

4. If noise still exists in "Forward" or "Fast-Forward" position check the reel shaft assembly (10). Remove wing nut (73) and spring (72), washer (71), reel pulley (70), clutch disc (68), pin (67), U-washer (66), washer (65), retaining ring (64), fibre washer (63), reel pulley assembly (10) and fibre washer (12). Clean and inspect all parts for wear or damage. Clean the bearing in the reel support assembly (62) and inspect bearing. Relubricate and replace any defective parts and reassemble in order shown on exploded view.

Pinch Roller Adjustment-

If pinch roller is damaged or out of adjustment, clean and adjust in the following manner:

1. To clean the follower lever assembly (23) and the pinch roller lever assembly (22), remove springs (20 and 24), and retaining ring (21). Remove both assemblies and shaft attached to mechanism plate. Clean thoroughly, removing old grease and dirt, and relubricate. Reassemble in reverse order. Adjust tab on follower lever assembly (23) so that pinch roller (22) engages flywheel capstan just before lever (54) releases supply reel pulley (9) from "Stop" position to "Forward". This prevents flare out of the tape in the supply reel, from "Stop" to "Forward" position.

MAINTENANCE

Cleaning The Play-Record Head-

The play-record head is subject to an accumulation of tape coating residue which is worn off the tape as it passes the head. This should be periodically removed since it may cause faint recordings and poor playback. Wipe off the record and erase head contact surfaces carefully with a clean cloth. If dirt is caked or hard and will not come off with a dry cloth, dampen the cloth slightly with carbon tetrachloride.

NOTE: Do not use a brush or excessive amount of solvent on the head surfaces.

Lubrication-

On normal use, the Ekotape requires a limited amount of lubrication. Motor, flywheel shaft, reel spindles, pinch roller assembly and idlers operate in oilite bearings. Whenever unit is disassembled for repair, clean all bearings, cams, and levers, and lubricate the following:

1. Lubricate all oilite bearings with SAE 20 oil.
2. Lubricate all cams and levers with Liqui-Moly NV Grease or equivalent.
3. Apply a thin film of lubricant on the working areas of parts.

NOTE: Do not use cleaning solvent on oilite bearings. Do not overlubricate.

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
V1		5879, Pre. Amp.	C18	S6065-3	Cap. Ceramic, 200MMF @ 500V.
V2		6C4, 1st A. F. Amp.	C19	211-14492	Cap. Molded Paper, .2MFD @ 400V.
V3		6C4, 2nd A. F. Amp.	C20	211-18931	Cap. Molded Paper, .47MFD @ 200V.
V4		6SN7GT, Record Amp. & Cathode Follower	C21	241-14260-1	Cap. Ceramic, 3000MMF @ 500V.
V5		6AQ5, Bias Osc.	C22	241-14260-1	Cap. Ceramic, 3000MMF @ 500V.
V6		5Y3GT, Rectifier	C23	S6065-2	Cap. Ceramic, 100MMF @ 500V.
C1A	241-19367	Elect. Cap., 40MFD @ 450V.	C24	241-14260-2	Cap. Ceramic, 17000MMF @ 500V.
C1B		Elect. Cap., 40MFD @ 450V.	R1	241-17940	Volume Control, 500K, 1/2 W.
C1C		Elect. Cap., 40MFD @ 450V.	R2	29501-53	Resistor, 510K, 1/2 W.
C2A	241-14238	Elect. Cap., 40MFD @ 450V.	R3	29501-29	Resistor, 22K, 1/2 W.
C2B		Elect. Cap., 40MFD @ 450V.	R4	29501-11	Resistor, 1K, 1/2 W.
C2C		Elect. Cap., 40MFD @ 25V.	R5	29501-53	Resistor, 510K, 1/2 W.
C3	S6063	Elect. Cap., 50MFD @ 6V.	R6	29501-56	Resistor, 1MEG, 1/2 W.
C4	S6065-3	Cap. Ceramic, 200MMF @ 500V.	R7	29501-44	Resistor, 150K, 1/2 W.
C5	S3595	Cap. Molded Paper, .1MFD @ 400V.	R8	29501-35	Resistor, 51K, 1/2 W.
C6	S4261	Cap. Molded Paper, .05MFD @ 400V.	R9	29501-14	Resistor, 2K, 1/2 W.
C7	S3595	Cap. Molded Paper, .1MFD @ 400V.	R10	29501-35	Resistor, 51K, 1/2 W.
C8	211-14912	Cap. Molded Paper, .05MFD @ 200V.	R11	29501-44	Resistor, 150K, 1/2 W.
C9	211-30639	Cap. Molded Paper, .02MFD @ 400V.	R12	29501-41	Resistor, 100K, 1/2 W.
C10	211-15048	Cap. Molded Paper, .047MFD @ 400V.	R13	29501-14	Resistor, 2K, 1/2 W.
C11	S4261	Cap. Molded Paper, .05MFD @ 400V.	R14	29501-48	Resistor, 240K, 1/2 W.
C12	S6065-9	Cap. Ceramic, 400MMF @ 500V.	R15	29501-21	Resistor, 5.1K, 1/2 W.
C13	S6065-9	Cap. Ceramic, 400MMF @ 500V.	R16	29501-56	Resistor, 1MEG, 1/2 W.
C14	S6065-3	Cap. Ceramic, 200MMF @ 500V.	R17	29501-75	Resistor, 5.1K, 1 W.
C15	S6065-3	Cap. Ceramic, 200MMF @ 500V.	R18	29501-35	Resistor, 51K, 1/2 W.
C16	241-12167-1	Cap. Molded Paper, .006MFD @ 400V.	R19	29501-95	Resistor, 2MEG, 1/2 W.
C17	S6065-3	Cap. Ceramic, 200MMF @ 500V.	R20	29501-44	Resistor, 150K, 1/2 W.
			R21	29501-53	Resistor, 510K, 1/2 W.
			R22	29501-48	Resistor, 240K, 1/2 W.
			R23	29501-48	Resistor, 240K, 1/2 W.
			R24	29501-41	Resistor, 100K, 1/2 W.
			R25	29501-32	Resistor, 30K, 1/2 W.
			R26	29501-36	Resistor, 62K, 1/2 W.

ELECTRICAL PARTS LIST - Con't

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
R27	29501-36	Resistor, 62K, 1/2 W.	R36	29502-14	Resistor, 20K, 10W.
R28	29501-14	Resistor, 2K, 1/2 W.	T1	242-17935	Power Transformer
R29	29501-35	Resistor, 51K, 1/2 W.	L1	241-14246-1	Bias Osc. Coil
R30	29501-53	Resistor, 510K, 1/2 W.	L2	242-17937	Filter Choke
R31	29501-29	Resistor, 22K, 1/2 W.	M1	28755-7	Fuse, 2Amp.
R32	29501-53	Resistor, 510K, 1/2 W.	M2	P11139-1	Lamp, #51
R33	29501-17	Resistor, 3K, 1/2 W.	M3	242-18165	Selector Switch Assy.
R34	29501-41	Resistor, 10K, 1/2 W.	M4	241-17949	Equalizer Switch
R35	29502-15	Resistor, 1K, 5W.	M5	241-17942	Speaker Switch
			M6		On-Off Switch

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	241-17818-1	Control Knobs, Amplifier	58	241-17770	Washer, Fibre
2	242-19844-1	Mechanism Control Knob Assy.	59	241-17770	Washer, Fibre
3	241-15116	Socket Hd. Set Screw	60	241-17801	Spring
4	242-17815-1	Knob Assembly	61	241-17801	Spring
5	241-17816-2	Back Cover	62	242-17703-2	Reel Shaft Support Assy.(right)
6	29529-14	Rec. Pan. Hd. Mach. Screw	63	241-17770	Washer, Fibre
7	241-17817-1	Record Head Cover	64	29650-2	Retaining Ring
8	29529-41	Rec. Pan Hd. Mach. Screw	65	29602-133	Washer, Steel
9	242-17761	Reel Shaft Assembly (left)	66	241-17775	U-Washer, Steel
10	242-17771-1	Reel Shaft Assembly (right)	67	241-17086-4	Pin
11	241-17770	Washer, Fibre	68	241-17777	Clutch Disc
12	241-17770	Washer, Fibre	69	29650-2	Retaining Ring
13	241-17814-1	Top Panel	70	242-17773-1	Reel Pulley Assembly
14	29529-40	Mach.Screws Top Panel Mtg.	71	29602-102	Washer, Steel
15	29527-4	Screw	72	241-17644	Spring
16	29602-103	Washer, Steel	73	241-27799-1	Self Locking Wing Nut
17	241-17747	Washer, Fibre	74	241-17802	Spring
18	242-17744	Pinch Roller Assembly	75	241-17802	Spring
19	241-17722	Washer, Fibre	76	242-17736-1	Top Lever and Idler Assy.
20	241-12138	Spring	77	29650-1	Retaining Ring
21	29650-1	Retaining Ring	78	241-17723	Spring Tension Washer
22	242-17741-2	Pinch Roller Lever Assembly	79	242-17724-1	Cam Shaft Assy.
23	242-17739-2	Follower Lever Assembly	80	242-17739-2	Follower Lever Assembly
24	241-17734	Spring	81	241-17717-1	Idler Link Assembly
25		Screw, Record Head Mounting	82	241-17717-1	Idler Link Assembly
26		Flat Washer Steel	83	242-17737-2	Follower Lever Assembly
27	29650-1	Retaining Ring	84	242-17766-1	Reel Pulley Assembly
28	242-17748-1	Pressure Pad Assembly	85		Set Screw Allen
29	241-17801	Spring	86	242-17731-2	Lower Lever and Idler Assy.
30	242-14159	Play-Record-Erase Head Assy.	87	241-17723	Spring Tension Washer
31	29527-13	Screw (2 Used)	88	29650-1	Retaining Ring
32	241-17754	Top Tape Guide (2 Used)	89	241-17778-1	Flywheel and Shaft Assy.
33	241-17753	Tape Guide Spacer (2 Used)	90	241-13609	Steel Ball
34	241-17752	Tape Guide Shelf	91	29650-1	Retaining Ring
35	242-17710-1	Pinch Roller Cam Assembly	92		Keyed Washer
35A	242-17707-1	Cam and Shaft Assembly	93	241-17723	Spring Tension Washer
36	242-17713-1	Index and Interlock Lever Assy.	94	242-17788-2	Motor Pulley Assembly(Includes items 95, 96 and 97)
37	241-17801	Spring	95		Motor Pulley Clutch Washer
38	29651-1	Retaining Ring	96	241-17789-2	Motor Pulley
39	241-12059	Spring Tension Washer	97		Allen Set Screw
40	29602-124	Washer	98		Lockwasher
41		Remote Lever Arm	99		Support Plate Mounting Screw
42	241-17734	Spring	100	242-17765-1	Support Plate Assembly
43	242-17683-3	Mechanism Plate Assembly	101		Washer Steel
44	29651-1	Retaining Ring	102		Lockwasher
45	244-17758-1	Brake Lever Assembly	103		Motor Mounting Screw
46	241-17734	Spring	104	241-17674	Motor
47	241-12059	Spring Tension Washer	104A	241-17786-1	Motor Mounting Plate
48	29602-122	Washer	105	241-14134	Fan
49	29651-1	Retaining Ring	106		Set Screw
50	241-17734	Spring	107	242-17716-1	Idler Link Assembly
51	242-17755-1	Remote Lever Assembly	108	241-17723	Spring Tension Washer
52	242-19349	Switch Cam Assembly	109	29650-1	Retaining Ring
53	242-1775	Set Screw	110	242-17719-3	Idler Assembly
54	242-17758-1	Brake Lever Assembly	111	241-17722	Washer Fibre
55	242-17695-1	Reel Shaft Support Assy.	112	29650-1	Retaining Ring
56	29602-124	Washer	113	242-17884	Brake Arm Assembly
57	241-12059	Spring Tension Washer			